IN THE CLAIMS:

Page 50, before Claim 1, delete:

<center>~~CLAIMS~~</center>

Page 50, before Claim 1, insert:

WHAT IS CLAIMED IS:

Please cancel claims 1-20 without prejudice or disclaimer, and substitute new claims 21-42 therefor as follows:

1-20.   (Canceled)

21.   (New) A wavelength converter device for generating a converted radiation at frequency ω_g through interaction between at least one signal radiation at frequency ω_s and at least one pump radiation at frequency ω_p, comprising:

an input for said at least one signal radiation at frequency ω_s;

a pump light source for generating said at least one pump radiation at frequency ω_p;

an output for taking out said converted radiation at frequency ω_g; and

a structure for transmitting said signal and pump radiation, said structure including one optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation, and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g;

said structure comprising a further optical resonator coupled in series to said optical resonator, said further optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation,

and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g; wherein by propagating through said structure, the pump and signal radiation generate said converted radiation by non-linear interaction within said optical resonators.

22.   (New) The wavelength converter device according to claim 21, wherein the converted radiation is generated by four-wave-mixing.

23.   (New) The wavelength converter device according to claim 21, wherein the optical resonator and the further optical resonator each have an optical length lower than or equal to 7500*λ/2.

24.   (New) The wavelength converter device according to claim 21, wherein the optical resonator and the further optical resonator comprise reflectors each having a power reflectivity of at least 0.5.

25.   (New) The wavelength converter device according to claim 21, wherein the optical resonator is a Fabry-Perot like cavity bounded by two partially reflecting mirrors.

26.   (New) The wavelength converter device according to claim 25, wherein the further optical resonator is a Fabry-Perot like cavity bounded by two partially reflecting mirrors.

27.   (New) The wavelength converter device according to claim 21, wherein the optical resonator is a micro-ring-like resonator.

28.   (New) The wavelength converter device according to claim 27, wherein the further optical resonator is a micro-ring-like resonator.

29.   (New) The wavelength converter device according to claim 21, wherein the optical resonator is formed in a photonic crystal waveguide.

30. (New) The wavelength converter device according to claim 29, wherein the further optical resonator is formed in a photonic crystal waveguide.

31. (New) The wavelength converter device according to claim 21, further comprising an additional structure in series to the structure.

32. (New) The wavelength converter device according to claim 31, further comprising a phase mismatch compensating element adapted to compensate for the phase mismatch accumulated by the pump and signal radiation along the structure.

33. (New) The wavelength converter device according to claim 32, wherein the phase mismatch compensating element is placed between the structure and the additional structure.

34. (New) The wavelength converter device according to claim 32, wherein the phase mismatch compensating element comprises a material having a non-linear refractive index n2 lower than the non-linear refractive index of the material included in the structure and the additional structure.

35. (New) A method for generating a radiation at frequency ω_g comprising, interacting through non-linear interaction at least one pump radiation at frequency ω_p with at least one signal radiation at frequency ω_s in a structure comprising a plurality of cascaded optical resonators wherein said resonators comprise a non-linear material, resonate at the pump, signal and converted frequencies ω_p, ω_s and ω_g, and have an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation.

36. (New) The method according to claim 35, wherein the radiation at frequency ω_g is generated by four-wave mixing.

37. (New) An apparatus for an optical network node comprising

a routing element with at least one input port and a plurality of output ports for interconnecting each input port with at least one corresponding output port;

at least one wavelength converter device for generating a converted radiation at frequency ω_g through interaction between at least one signal radiation at frequency ω_s and at least one pump radiation at frequency ω_p, comprising:

an input for said at least one signal radiation at frequency ω_s;

a pump light source for generating said at least one pump radiation at frequency ω_p;

an output for taking out said converted radiation at frequency ω_g; and

a structure for transmitting said signal and pump radiation, said structure including one optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation, and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g,

said structure comprising a further optical resonator coupled in series to said optical resonator, said further optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation, and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g; wherein by propagating through said structure the pump and signal radiation generate said converted radiation by non-linear interaction within said optical resonators,

said at least one wavelength converter device being optically coupled to one of the ports of said routing element.

38.   (New) The apparatus for an optical network node according to claim 37, further comprising an additional structure in series to the structure.

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39. (New) The apparatus for an optical network node according to claim 38, further comprising a phase mismatch compensating element adapted to compensate for the phase mismatch accumulated by the pump and signal radiation along the structure.

40. (New) An optical communication line comprising an optical transmission path for transmitting at least one signal radiation at frequency ω_s, and a wavelength converter device for generating a converted radiation at frequency ω_g through interaction between at least one signal radiation at frequency ω_s and at least one pump radiation at frequency ω_p, comprising

an input for said at least one signal radiation at frequency ω_s;

a pump light source for generating said at least one pump radiation at frequency ω_p;

an output for taking out said converted radiation at frequency ω_g; and

a structure for transmitting said signal and pump radiation, said structure including one optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation, and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g,

said structure comprising a further optical resonator coupled in series to said optical resonator, said further optical resonator comprising a non-linear material, having an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the pump radiation, and resonating at the pump, signal and converted frequencies ω_p, ω_s and ω_g; wherein by propagating through said structure the pump and signal radiation generate said converted radiation by non-linear interaction within said optical resonators,

said wavelength converter device being optically coupled to said optical transmission path for generating a radiation at frequency ω_g by non-linear interaction between at least one pump radiation at frequency ω_p and said at least one signal radiation at frequency ω_s.

41.   (New) The optical communication line according to claim 40, wherein the optical transmission path is an optical fiber length.

42.   (New) A method for altering the optical spectrum of at least one optical signal radiation at frequency ω_s propagating through it comprising, interacting by non-linear interaction of the optical signal radiation within material of a plurality of cascaded optical resonators, wherein said optical resonators resonate at the signal radiation frequency ω_s and have an optical length of at least $40*\lambda/2$, wherein λ is the wavelength of the optical signal radiation.